

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MARYLAND**

**FIREMAN’S FUND INSURANCE  
COMPANY, a/s/o MANGIONE FAMILY  
ENTERPRISES,**

**Plaintiff**

**v.**

**TECUMSEH PRODUCTS COMPANY,  
*et al.*,**

**Defendants**

**CIVIL NO. JKB-09-2811**

**MEMORANDUM**

Fireman’s Fund Insurance Company (“Plaintiff”) brought this subrogation action against Aireco, Inc. (“Aireco”), Tecumseh Products Company (“Tecumseh”), and Sensata Technologies, Inc. (“Sensata”). (Compl., ECF No. 1). Plaintiff entered stipulated dismissals of its claims against Aireco (Stip. Dismiss, ECF No. 39) and Tecumseh (Stip. Dismiss, ECF No. 43), and only its claim against Sensata (“Defendant”) remains. Defendant has moved to exclude the testimony of Plaintiff’s two expert witnesses, Ronald Thomsen and Kenneth McLauchlan, and for summary judgment. (Def.’s Mot. Exclude & Summ. J., ECF No. 46). The issues have been briefed, and no oral argument is required. Local Rule No. 105.6. For reasons explained below, Defendant’s motion is GRANTED IN PART and DENIED AS MOOT IN PART. The testimony of Kenneth McLauchlan is excluded, the testimony of Ronald Thomsen is not addressed, and summary judgment is ordered in favor of Defendant.

## ***I. Background***

### ***A. Facts***

On November 13, 2006, a fire broke out in Room 203 of the Hilton Garden Inn in Owings Mills, Maryland. (Pl.'s Resp. 1-2, ECF No. 48). The fire caused nearly \$100,000 in damage, for which Plaintiff paid under a property insurance policy it had issued to the hotel's owner, Mangione Family Enterprises ("Mangione"). *Id* at 2. Having made this payment, Plaintiff is now Mangione's subrogee. *Id*.

Plaintiff retained two certified fire investigators to determine the cause of the fire. *Id*. The first investigator, Ronald Thomsen ("Thomsen"), conducted an investigation of the premises on November 16, 2006. (Thomsen Report P305, ECF No. 48, Ex. A). He observed fire patterns in the building, which he believed indicated the origin of the fire was in the southeast corner of Room 203, where a heat pump had been located. *Id* at P307. Thomsen inspected the heat pump and noted that it exhibited substantial thermal damage. *Id*. He also noted thermal damage to the exterior of the electrical outlet into which the heat pump was plugged. *Id*.

Thomsen then interviewed the chief building engineer, David Fritsch ("Fritsch"). *Id* at P308. Fritsch reported that heat pumps in other rooms in the hotel had malfunctioned and that a component part of the heat pumps, the compressor, had to be replaced on an almost regular basis. *Id*. For this reason, Fritsch said that he always kept three or four spare compressors in his shop to replace those that failed. He further stated that hotel staff replaced the compressor in the heat pump in Room 203 in April of 2002. *Id*.

Thomsen noted that a history of compressor failure was consistent with the evidence he observed in Room 203. *Id* at P309. He therefore concluded that the fire originated in the heat

pump in Room 203, and was caused by an undetermined failure or malfunction of that heat pump. *Id* at P310.

Plaintiff's second investigator, Kenneth McLauchlan ("McLauchlan"), was retained to determine the exact cause of the hypothesized failure in the heat pump compressor. (Pl.'s Resp. 3). McLauchlan holds a bachelor of science degree in mechanical engineering and has been certified as a Fire and Explosion Investigator by the National Association of Fire Investigators. *Id* at 3. He also has experience with designing electrical control systems and with forensic examination of electrical components. *Id* at 3-4.

McLauchlan conducted an investigation of the fire on November 17, 2006, during which he inspected the site of the fire, took photographs, and interviewed chief building engineer Fritsch. *Id*. McLauchlan began by examining the patterns of fire damage on the outside of the building and inside Room 203. (McLauchlan Dep. 86-87, ECF No. 48, Ex. B) Like Thomsen, he identified the southeast corner as the origin of the fire, and determined that the heat pump was the only plausible source. (Pl.'s Resp. 20).

McLauchlan returned to the hotel on November 21, 2006, and took custody of three heat pumps: the heat pump from Room 203 ("Subject"), a working heat pump of the same model ("Working Exemplar"), and a damaged heat pump of the same model that had previously failed in service (though unrelated to the fire of November 13) ("Damaged Exemplar"). *Id*. After examining and comparing the heat pumps, McLauchlan issued two different reports to Mangione describing his investigation and his conclusions about the cause of the fire. (McLauchlan Report I, ECF No. 46, Ex. E); (McLauchlan Report II, ECF No. 46, Ex. F).

The following is the account of the investigation set out in McLauchlan's second report.<sup>1</sup> McLauchlan first describes the Subject. He notes that the exterior was significantly burned, as was the control compartment, and that all insulation of the power and control wiring was destroyed. (McLauchlan Report II 3). Neither the power and control wiring nor the power cord conductor showed any signs of electrical activity, which allowed McLauchlan to rule out a defect in the power cord as a cause of the fire. *Id.* But, the compressor power conductors were separated from the compressor terminal, and there was evidence of electrical activity (melting) on the common winding power conductor. *Id.* McLauchlan measured the resistance of the compressor winding and determined that all windings were shorted to case ground, which he explained was consistent with damage from a fire external to the compressor. *Id.* at 5. When McLauchlan removed the heat pump's casing panels, he found that the left panel's interior insulation was burned in a pattern that aligned with the exterior of the compressor. *Id.*

McLauchlan also recovered a small fragment of a component part of the compressor called a thermal overload protector ("TOP"). (Pl.'s Resp. 22). A TOP is an electrical device that is designed to prevent overheating by shutting off the flow of electric current when it detects abnormally high temperatures. (McLauchlan Report II 7). When those temperatures occur, the TOP automatically separates a set of metal contact surfaces through which electric current flows. *Id.* Apart from the fragment McLauchlan recovered, the TOP from the Subject was completely destroyed by the fire. (McLauchlan Dep. 108).

McLauchlan then goes on to describe the Damaged Exemplar. He notes fire damage to the interior of the left casing panel, in the same place and in the same pattern as the Subject. (McLauchlan Report II 6). There was also thermal damage to the TOP, located on the exterior surface of the compressor, and to the power conductors routed to the TOP. *Id.* All of the TOP's

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<sup>1</sup> The second report incorporates all relevant information from the first report.

internal components were either damaged or destroyed, and there was evidence of electrical activity, “arcing,” in the integral conductor routed from the compressor’s common terminal to the TOP. *Id.* McLauchlan found it significant that there was no sign of electrical activity on the conductors that did not run through the TOP, which only showed damage consistent with a fire originating at the TOP. *Id.*

Describing his analysis, McLauchlan states that inspection of the Subject TOP revealed signs of electrical activity on the integral conductor, similar to that observed in the Damaged Exemplar. *Id.* at 7. He also states that he examined the components of the Subject TOP with a stereo microscope and observed evidence of arcing that destroyed a part of the TOP near one of the metal contacts, as well as other electrical activity on the contact itself and on the integral conductor. *Id.* But, at his deposition McLauchlan stated that all of the Subject TOP’s components were destroyed in the fire and that he was unable to examine them. (McLauchlan Dep. 108). He also stated that the photographs referenced in the report in connection with the alleged inspection of the Subject TOP are actually of the Damaged Exemplar. *Id.* at 122.

Next, McLauchlan describes inspecting the contact surfaces in the TOP of the Working Exemplar. The surface of one contact did not extend over the entire surface of the other. (McLauchlan Report II 8). McLauchlan determined that the surface was being eroded by a process called “pitting.” *Id.*

Finally, McLauchlan states that he researched the existence of any known defects in Sensata TOPs, but was unable to find any. *Id.* at 7.

The next section of McLauchlan’s report is entitled “Methodology.” McLauchlan first states that his initial hypothesis was that a high-resistance heating fault in the Subject TOP and its integral components caused the fire. *Id.* at 8. He then claims he performed “testing and

detailed inspection,” which showed that there was an electrical arcing failure on the TOP’s internal contact surfaces, and that this failure was observed in both the Subject and Damaged Exemplar TOPs. *Id.* He does not, however, describe the alleged tests. *Id.* He asserts that the most likely cause of the arcing was a high-resistance heating fault caused by pitting on the contact surfaces. *Id.* at 9. He further claims that the results of the resistance heating were “observed” to have destroyed the components of the Subject and Damaged Exemplar TOPs, and that the Working Exemplar showed “evidence” of this “failure mode.” *Id.*

Based on the above, McLauchlan concluded “to a reasonable degree of engineering certainty” that: (1) the fire was most likely caused by a high-resistance heating fault in the internal contact surfaces of the Subject TOP, which was the result of arcing caused by erosion of the surfaces over time by pitting; (2) all other potential causes of the fire could be ruled out; and (3) the initial source of the heating fault, pitting, was the result of a manufacturing defect. *Id.*

### ***Expert Testimony***

#### ***A. Standard of Review***

Where a party seeks to offer the opinion testimony of an expert witness, Federal Rules of Evidence 104(a) and 702 together require district courts to make an initial determination of the expert’s qualifications and of the relevance and reliability of the testimony. *See Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579, 580 (1993); *Kumho Tire v. Carmichael*, 526 U.S. 137, 141 (1999); *United States v. Moreland*, 437 F.3d 424, 431 (4th Cir., 2006). That determination employs a flexible standard, the aim of which is to prevent the fact-finder from being unduly swayed by opinions, presented as expert judgments, that in fact amount to no more than informed speculation. *See Kumho Tire*, 526 U.S. 137 *passim*; *Bryte v. American Household*, 429 F.3d 469, 477 (4<sup>th</sup> Cir. 2005). In performing this gate-keeping function, the

district court enjoys wide latitude in determining what indicia of reliability it will require in a given case. *See Kumho Tire*, 526 U.S. at 141. At the trial court's discretion, those indicia may, but need not, include:

(1) whether a theory or technique can be (and has been) tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) whether a technique has a high known or potential rate of error and whether there are standards controlling its application; and (4) whether the theory or technique enjoys general acceptance within the relevant community. *Id.*

The party seeking admission of the expert testimony bears the burden of establishing admissibility by a preponderance of the evidence. *Higginbotham v. KCS Intern*, 85 F.App'x 911, 916 (2004) (citing *Daubert*, 509 U.S. at 592 n.10).

### ***B. Analysis***

Defendants move to exclude the testimony of Kenneth McLauchlan on the grounds that he is not a qualified expert and that the methodology he employed in reaching his conclusions is unreliable. (Def.'s Mot. Exclude & Summ. J. 2). Because the Court agrees that McLauchlan's methodology is unreliable, it is not necessary to reach the issue of his qualifications.<sup>2</sup>

Because McLauchlan's hypothesis is unique to this case, the Court would not expect it to be published or peer reviewed, or to have a known error rate. *See Kumho* 526 U.S. at 150-151 (noting that the factors identified in *Daubert* are not a definitive checklist, and that it should not be surprising if certain factors are not relevant in certain types of cases). But, the Court finds that two of the factors listed in *Daubert*, testing and general acceptance, are useful criteria for evaluating McLauchlan's methodology and ultimate conclusions. *See Daubert*, 509 U.S. at 580.

All parties agree that the generally accepted standards of fire investigation are set out in National Fire Protection Association 921 Guide for Fire and Explosion Investigations ("NFPA

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<sup>2</sup> The Court also does not reach Defendant's arguments as to Thomsen because, as discussed *infra*, without McLaughlan's testimony, there is no longer any genuine factual dispute, and the Court may therefore resolve this case as a matter of law.

921”). (NFPA 921, ECF No. 46, Ex. G”);<sup>3</sup> (Def.’s Mem. 18, ECF No. 47); (Pl.’s Resp. 12). *See also* *Bryte v. American Household*, 429 F.3d 469, 478 (4<sup>th</sup> Cir. 2005), *and Fireman’s Fund Insurance v. Canon U.S.A.*, 394 F.3d 1054, 1060 (8<sup>th</sup> Cir. 2005)(recognizing failure to follow NFPA procedures as reason to support excluding fire investigator’s testimony).

Several of the provisions in NFPA 921 are directly applicable to McLauchlan’s investigation. Chapter Four, entitled *Basic Methodology*, sets out the basic application of the scientific method to fire investigation. (NFPA 921 4.1-4.5). It instructs the investigator to collect data about the fire “by observation, experiment, or other direct... means,” to analyze the data objectively and without speculation, to develop a hypothesis based solely on the data collected, to test the hypothesis by comparing it to all known facts, and to repeat the process until all feasible hypotheses have been tested. *Id* at 4.3.3 – 4.3.6. Until all these steps are completed, NFPA 921 unambiguously requires an investigator to list the cause of the fire as undetermined. *Id* at 4.3.6. Chapter Eight contains more specific provisions for forming hypotheses regarding electrical fires. Paragraph 8.9.1.3 provides that:

In considering the possibility of an electrical ignition, the temperature and duration of the heating must be great enough to ignite the initial fuels. The type and geometry of the fuel must be evaluated to be sure that the heat was sufficient to generate combustible vapors and for the heat source still to be hot enough to ignite those vapors. *Id* at 8.9.1.3.

Facts about the characteristics of the fuels and materials involved in an electrical fire are thus part of the data set that an investigator must assemble in order to carry out the process prescribed in Chapter Four.

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<sup>3</sup>The Court references the 2008 Edition attached to Defendant’s Motion. Plaintiff argues that the 2004 Edition, which it has attached, is the proper source, since it was the edition in print at the time of the investigation. (Pl.’s Resp. 20 n.1). Regardless of the merits of that contention, the Court does not see, and Plaintiff does not identify, any relevant difference between the two editions. Plaintiff has furthermore failed to provide, or otherwise address, the text of Chapter Eight, discussed *infra*, which Defendant raised in its Memorandum and which is clearly relevant to this case. (Def.’s Mem. 20-21).



Furthermore, many of the general principles reflected in these procedures have also been applied independently by courts as measures of expert witness reliability in other contexts. Testing, in particular, is often a key component of the *Daubert* inquiry, and the failure to properly test a hypothesis is often grounds for excluding expert testimony in this jurisdiction. *See, e.g., Marsh v. W.R. Grace & Co.*, 80 F.App'x 883 (4<sup>th</sup> Cir. 2003); *Tunnell v. Ford Motor*, 245 F.App'x. 283, 287 (4<sup>th</sup> Cir. 2007). Also of critical importance to the *Daubert* inquiry is that the expert rule out alternative hypotheses. *See Higginbotham v. KCS Intern*, 85 F.App'x 911, 916 (2004). He must demonstrate not only that his hypothesis is plausible, but that *it*, and not some alternative hypothesis, best explains the event in question. *See Id.* Finally, courts have also required experts to demonstrate that objects and materials are capable of behaving in the manner they hypothesize under the conditions of the event in question. *See id.*

It is clear from McLauchlan's account of his investigation that he did not meet these standards. First, McLauchlan did not determine the ignition temperature of the conductor insulation that he claims caught fire, how long it would have to be exposed to that temperature, or how much contact surface in the TOP would have to erode to produce a heating fault capable of producing the required temperature for the required time. (McLauchlan Dep. 172-75). He therefore did not properly collect the data that NFPA 921 requires.

Second, McLauchlan formed his hypothesis through speculation. Specifically, he appears to have speculated that because the Subject and the Damaged Exemplar had *some* similar damage, that damage must have been the result of the same cause in both heat pumps. *See id* at 144). He further speculated that the pitting he observed on the contact surfaces of the TOP from the Working Exemplar must also have occurred in the other two, though he could not observe it.

*Id* at 137, 139. And, finally, he speculated that the pitting was the result of a manufacturing defect. *Id* at 148.

Third, McLauchlan never tested his hypothesis, as both courts and NFPA 921 emphatically require. Plaintiff claims that “through the use of the exemplar heat pumps, which all contained Sensata thermal overload sensors, Mr. McLauchlan noticed a sequential pattern of damage: a sequence which began at the Sensata device... This observation helped Mr. McLauchlan test his initial hypothesis and, ultimately, develop and establish the final hypothesis.” (Pl.’s Resp. 21-22). Plaintiff then refers the Court to McLauchlan’s own report in order to avoid “continually rehashing every step McLauchlan took to test his hypothesis.” *Id* at 22. But, as summarized previously in this Memorandum, that report is scarcely more detailed than the account in Plaintiff’s Response. Neither Plaintiff nor McLauchlan himself describe any attempts to gather data or create conditions that might falsify his explanation, which is what *testing*, in its scientific sense, means. Rather, all the Court is able to infer from these vague and conclusory accounts is that McLauchlan observed three different heat pumps, imagined a sequence of events that would be consistent with his observations, and went no further.

This is plainly insufficient. As Plaintiff admits, McLauchlan *derived* his final hypothesis from his observations of the exemplar heat pumps, rather than testing it against them. It should be obvious that no set of observations can serve both to generate and to test the same hypothesis. At a minimum, a proper test of McLauchlan’s hypothesis would have involved either some attempt to replicate the process he claims ultimately led to the fire, or else some form of documentary evidence of the same process occurring elsewhere. Exactly how rigorous such a test would need to be to meet *Daubert*’s threshold of reliability is not at issue in this case; it is a sufficient basis for excluding McLauchlan’s testimony to observe that he performed no testing *at*

*all. See, e.g., Marsh v. W.R. Grace & Co.*, 80 F.App’x 883 (4<sup>th</sup> Cir. 2003), and *Tunnell v. Ford Motor*, 245 F.App’x. 283, 287 (4<sup>th</sup> Cir. 2007) (excluding expert testimony for lack of testing)

Finally, McLauchlan failed to test and exclude a plausible alternative explanation of the fire. At his deposition, McLauchlan conceded that the high-resistance heating fault he claims caused the fire could be the result of improper installation of the heat pump compressor, and that because of the extensive fire damage to the subject heat pump, it was impossible to differentiate between a heating fault caused by improper installation and one caused by pitting. (McLauchlan Dep. 161-64). He stated that his opinion (that pitting was the more likely cause) was based solely on his observation that the Damaged Exemplar showed evidence of arcing damage only on the conductors connected to the TOP, whereas improper installation would have resulted in damage at the compressor’s common terminal as well. *Id.* In other words, McLauchlan’s reasoning is that because damage to *one* heat pump in the world was not caused by improper installation of the compressor, the damage to the subject heat pump must not have been caused by improper installation either.

This is an unacceptable basis on which to rule out an otherwise plausible hypothesis. Whatever amount of circumstantial evidence would be required to reliably rule out improper installation, or anything else, is surely greater than a sample size of one. Plaintiff, however, argues that McLauchlan did rule out improper installation of the compressor based on his deposition testimony that, “Even if a compressor is installed improperly, that should have no effect on the operation of the thermal overload.” (McLauchlan Dep. 144); (Pl.’s Resp. 24). But, that fact in no way precludes the possibility that improper installation caused the fire; it merely suggests that *if* there was a malfunction in the Subject TOP, a proposition that has not been

established, the malfunction was not caused by improper installation. Therefore, McLauchlan did not rule out all plausible alternative hypotheses.

It is clear that McLauchlan has not employed in this Court “the same level of intellectual rigor that characterizes the practice of an expert” in the field of fire investigation. *See Kumho* 526 U.S. at 152. He did not meet the generally accepted standards of fire investigation set out in NFPA 921, and he has not satisfied the requirements of testing and ruling out of other hypotheses set out in *Daubert* and its progeny. The Court therefore concludes that Plaintiff has not carried its burden of showing that McLauchlan’s testimony is reliable. In view of this ruling, and in view of the Court’s ruling on Defendant’s motion for summary judgment, *infra*, the Court further finds that Defendant’s motion to exclude the testimony of Ronald Thomsen is moot.

### ***C. Conclusion***

Accordingly, an ORDER shall issue, granting Defendant’s motion as to Kenneth McLauchlan, and denying as moot Defendant’s motion as to Ronald Thomsen.

## ***III. Summary Judgment***

### ***A. Standard of Review***

Federal Rule of Civil Procedure 56(c) allows a court to award summary judgment when the moving party demonstrates that “the pleadings, the discovery and disclosure materials on file, and any affidavits show that there is no genuine issue as to any material fact...” But, if the opposing party can show that sufficient evidence exists for a reasonable jury to render a verdict in its favor, then summary judgment should be denied. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). A plaintiff opposing summary judgment must adduce more than a mere “scintilla” of evidence to avoid dismissal. *Id* at 252. The Court must view all facts, and the

reasonable inferences drawn from them, in the light most favorable to the opposing party, *Scott v. Harris*, 550 U.S. 372, 378 (2007); *Iko v. Shreve*, 535 F.3d 225, 230 (4th Cir. 2008).

### ***B. Analysis***

Defendant argues Plaintiff has adduced no admissible evidence that a defect in one of its TOPs caused the fire. (Def.'s Mem. 21). The Court agrees. Under Maryland law, a plaintiff may prove a product defect in one of three ways: (1) direct proof based on the nature of the accident and the product involved; (2) opinion testimony of an expert witness; or (3) inference of a defect based on circumstantial evidence. *Assurance Co. of America v. York Intern*, 305 F.App'x 916 (4<sup>th</sup> Cir. 2008). Since the subject TOP was destroyed in the fire, Plaintiff cannot produce any direct evidence that it was defective or that its defect caused the fire; and since the Court has excluded McLauchlan's testimony, Plaintiff also cannot offer the opinion of an expert witness. Therefore, Plaintiff can only proceed with circumstantial evidence.

This theory of recovery, called the "indeterminate defect" theory, allows a fact-finder to infer that a product defect caused a plaintiff's injury where circumstantial evidence tends to rule out other causes, such as misuse or alteration of the product. *Harrison v. Bill Cairns Pontiac*, 549 A.2d 385, 590 (Md. Ct. Spec. App.1988). A plaintiff may not recover, however, based on mere speculation, or on the occurrence of an accident *per se*. *Id* (citing *Jensen v. American Motor*, 437 A.2d 242 (1981)). Rather, recovery under the indeterminate defect theory is conditioned upon the weighing of five factors: (1) expert testimony as to possible causes; (2) the occurrence of the accident a short time after the sale; (3) same accidents in similar products; (4) the elimination of other causes of the accident; (5) the type of accident that does not happen without a defect. *Id*.

Here, the first factor is absent, because Plaintiff's only relevant expert testimony has been excluded. Plaintiff concedes that the second factor is also absent, because hotel staff installed the compressor containing the Subject TOP at least four years prior to the fire. (Pl.'s Resp. 37).

As to the third factor, Plaintiff contends that the electrical damage McLauchlan observed in the Damaged Exemplar, and the building engineer's hypothetical testimony as to "numerous other similar failures" is evidence of "similar fires in the same product." *Id.* This is simply untrue. Neither McLauchlan nor the building engineer claim to have observed a TOP ignite and sustain a fire in any heat pump. McLauchlan's claim that the damage to the Damaged Exemplar heat pump is in any way related to the subject fire, apart from being inadmissible, is speculative at best. Similarly, Plaintiff cites no facts in the record suggesting that the building engineer reported fires in other heat pumps, let alone ones originating in TOPs. Plaintiff has therefore adduced no evidence of the same accident involving other TOPs manufactured by Defendant.

As to the fourth factor, Plaintiff claims that McLauchlan ruled out other possible sources of the fire. *Id.* The Court has already addressed this claim in the preceding section and found it to be without merit, again quite apart from that fact that McLauchlan's testimony is inadmissible. Similarly, Plaintiff claims that McLauchlan's alleged ruling out of other causes satisfies the fifth factor, because it means that the fire could only have been caused by a defect. This claim, too, is meritless; but, regardless, the inquiry is not whether *this* accident *was* caused by a defect, but whether this *type* of accident *can* occur without a defect. If it were the former, the inquiry would demand direct evidence of a defect, which, if Plaintiff had such evidence, would make an indeterminate defect theory unnecessary. Plaintiff concedes that fires can occur in heat pumps without any defect in the TOP. *Id.* Therefore, the fifth factor is absent in this case.

Since Plaintiff has adduced no evidence as to any of the five factors that can prove an indeterminate defect, the Court finds that there is no genuine dispute between the parties as to any material fact, and that Defendant is entitled to summary judgment as a matter of law.

***C. Conclusion***

Accordingly, an order shall issue, granting Defendant's motion for summary judgment.

Date: March 2, 2011

/s/  
James K. Bredar  
United States District Judge